

ABSTRACT OF THE DISCLOSURE

On the top wall of a processing vessel 1 of a plasma processing system, a transmission window 10 capable of transmitting microwaves is provided. On the top of the transmission window 10, a microwave antenna 2 is mounted. Microwaves are supplied from a microwave supply source 3 to the antenna 2 through a connecting waveguide 4. The antenna 2 has two ring-shaped antenna waveguides 5a and 5b which are substantially concentrically arranged. Each of the antenna waveguides 5a and 5b comprises a rectangular waveguide having a bottom wall in which a plurality of slots 6a and 6b are formed at intervals, and the proximal end portion of each of the antenna waveguides 5a and 5b is connected to the connecting waveguide 4. The proximal end portions 7a and 7b of the antenna waveguides 5a and 5b are provided with control gates 9a and 9b for varying the size of apertures, respectively.